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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,742	11/28/2005	Katsuaki Hosono	09852/0202846-US0	9321
7278	7590	11/06/2007	EXAMINER	
DARBY & DARBY P.C. P.O. BOX 770 Church Street Station New York, NY 10008-0770			TRIEU, THERESA	
ART UNIT		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/532,742	HOSONO, KATSUAKI
	Examiner Theresa Trieu	Art Unit 3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 26 April 2005.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-8 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 6/7/07, 1/30/06, 4/26/05.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment filed on April 26, 2005 is acknowledged.

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Double Patenting*

4. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claim 7 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 6,887,056. This is a double patenting rejection.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Taniguchi (Patent Number 4,976,595).

Regarding claim 1, as shown in Figs. 1-3, Taniguchi discloses an oil pump rotor assembly comprising: an inner rotor 18 having "n" external teeth ("n" is a natural number); and an outer rotor 20 having (n+1) internal teeth which are engageable with the external teeth, wherein the oil pump rotor assembly is used in an oil pump which, during rotation of the inner and outer rotors, draws and discharges fluid by volume change of cells formed between the inner and outer rotors, wherein when a clearance (see Fig. 3), which is defined between the teeth of the inner and outer rotors that together form one of the cells which has the minimum volume among the cells, is designated as "a", a clearance (see Fig. 3), which is defined between the teeth of the inner and outer rotors that together form one of the cells whose volume is increasing during rotation of the inner and outer rotors, is designated as "b", and a clearance (see Fig. 3), which is defined between the teeth of the inner and outer rotors that together form one of the cells which has the maximum volume among the cells, is designated as "c", the following inequalities are satisfied:  $a \leq b \leq c$ , and  $a < c$  (see col. 3, line 57-68 – col. 4, line 1-61), and wherein

when the clearance "b" of the cell positioned forward as viewed in the direction of rotation is further designated as "b1", and the clearance "b" in the cell positioned backward as viewed in the direction of rotation is further designated as "b2", the following inequality is satisfied:  $b1 < b2$  (see claims 1 and 2).

Regarding claim 2, Taniguchi further discloses when a clearance, which is defined between the teeth of the inner and outer rotors that together form one of the cells whose volume is decreasing during rotation of the inner and outer rotors, is designated as "d", the following inequalities are satisfied:  $a \leq b \leq c$ ,  $a < c$ , and  $a \leq d \leq c$  (see col. 3, line 57-68 – col. 4, line 1-61 – claims 1 and 2), and wherein when the clearance "d" in the cell positioned backward as viewed in the direction of rotation is further designated as "d1", and the clearance "d" in the cell positioned forward as viewed in the direction of rotation is further designated as "d2", the following inequality is satisfied:  $d1 \geq d2$ .

Regarding claims 3 and 4, as shown in Figs. 1-3, Taniguchi discloses an oil pump rotor assembly comprising: an inner rotor 18 having "n" external teeth ("n" is a natural number); and an outer rotor 20 having  $(n+1)$  internal teeth which are engageable with the external teeth, wherein the oil pump rotor assembly is used in an oil pump which, during rotation of the inner and outer rotors, draws and discharges fluid by volume change of cells (not numbered; however, clearly seen in Fig. 3) formed between the inner rotor and the outer rotor, and wherein a clearance (see Fig. 3), which is defined between the teeth of the inner and outer rotors that together form one of the cells, gradually increases as the cell rotationally moves from a position at which the volume of the cell is minimized to a position at which the volume of the cell is maximized (see col. 3, line 57-68 – col. 4, line 1-61; claims 1 and 2); the clearance (see Fig. 3),

which is defined between the teeth of the inner and outer rotors that together form one of the cells, gradually decreases as the cell rotationally moves from a position at which the volume of the cell is maximized to a position at which the volume of the cell is minimized.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi in view of Hosono (Patent Number 6,077,059).

Taniguchi discloses the invention as recited above; however, Taniguchi fails to disclose tooth surfaces of the inner and outer rotors.

Regarding claim 5, as shown in Figs. 1-3, Hosono '059 teaches that it is conventional in the gear pump art to utilize the tooth surfaces of the inner and outer rotors (10, 20) being respectively formed using cycloid curves which are formed by rolling respective rolling circles along respective base circles (Bi, Bo) without slip (see claim 1). With regard claim 8, Hosono '059 further discloses wherein each of the tooth profiles of the inner rotor is formed such that the tip profile thereof is formed using an epicycloid curve which is formed by rolling a first circumscribed-rolling circle Di along a base circle "bi" without slip, and the tooth space profile thereof is formed using a hypocycloid curve which is formed by rolling a first inscribed-rolling circle "di" along the base circle "bi" without slip, and each of the tooth profiles of the outer rotor is formed such that the tip profile thereof is formed using an epicycloid curve which is formed by

rolling a second circumscribed-rolling circle  $D_0$  along a base circle "bo" without slip, and the tip profile thereof is formed using a hypocycloid curve which is formed by rolling a second inscribed-rolling circle "do" along the base circle "bo" without slip, and wherein the inner rotor and the outer rotor are formed such that the following equations and inequalities are satisfied:  $\phi_{bi} = n(\phi_{Di} + \phi_{di})$ ;  $\phi_{bo} = (n+1)(\phi_{Di} + \phi_{do})$ ; one of  $\phi_{Di} + \phi_{di} = 2e$  and  $\phi_{Do} + \phi_{do} = 2e$ ;  $\phi_{Do} > \phi_{Di}$ ;  $\phi_{di} > \phi_{do}$ ; and  $(\phi_{Di} + \phi_{di}) < (\phi_{Do} + \phi_{do})$ , where  $\phi_{bi}$  is the diameter of the base circle "bi" of the inner rotor,  $\phi_{Di}$  is the diameter of the first circumscribed-rolling circle  $D_i$ ,  $\phi_{di}$  is the diameter of the first inscribed-rolling circle "di",  $\phi_{bo}$  is the diameter of the base circle "bo" of the outer rotor,  $\phi_{Do}$  is the diameter of the second circumscribed-rolling circle  $D_o$ ,  $\phi_{do}$  is the diameter of the second inscribed-rolling circle "do", and "e" is an eccentricity distance between the inner and outer rotors (see col. 5, line 65-67 – col. 6, lines 1-40, col. 8, line 1-50 and see claims 1 and 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the tooth surfaces of the inner and outer rotors, as taught by Hosono in the Taniguchi apparatus, since the use thereof would have improved the mechanical efficiency and efficiency of the oil pump.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi in view of Hosono (Patent Number 6,077,059) as applied to any claims 1-3 above, and further in view of Hosono et al. (Hosono) (Patent Number 5,813,844).

The modified Taniguchi discloses the invention as recited above; however, the modified Taniguchi fails to disclose tooth surfaces of the inner rotor and tooth tips of the outer rotor.

Hosono '059 (as shown in Figs. 1 and 3) teaches that it is conventional in the gear pump art to utilize the tooth tips 21 of the outer rotor 20 being formed using an arc having the same

radius as that of the trajectory circle. Furthermore, Hosono '844 (as shown in Fig. 2) discloses the tooth surfaces 11 of the inner rotor 10 being formed using a trochoid envelope curve (t) which is formed by moving a trajectory circle, whose center is positioned on a trochoid curve, along the trochoid curve (t). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized tooth surfaces of the inner rotor and tooth tips of the outer rotors, as taught by Hosono' 059 and Hosono ' 844 in the modified Taniguchi apparatus, since the use thereof would have reduced the resistance which is generated by each of the sliding parts in the inner and outer rotors and the casing and ensured the oil pump's durability and reliability.

***Prior Art***

8. The IDS (PTO-1449) filed on June 7, 2007, Jan. 30, 2006 and April 26, 2005 has been considered. An initialized copy is attached hereto.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents: Saegusa (U.S. Patent Number 4,504,202), Bristow (Publication Number EP 173,778), Taniguchi (Publication Number JP 02-095787), Hosono (Publication Number JP 08-128392) and Hosono (Publication Number JP 11-264381), each further discloses a state of the art.

***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa Trieu whose telephone number is 571-272-4868. The examiner can normally be reached on Monday-Friday 8:30am- 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT  
November 2, 2007

  
Theresa Trieu  
Primary Examiner  
Art Unit 3748